transforms the 10 ms radio frame through the demodulation, the deinterleaving and the decoding process by using the TFI1, the sequence number and the version number and transmits the MAC-PDU having the RLC-PDU to the UE-MAC-C/SH protocol entity by using the transport channel (PHY-Data-IND primitive), such as the DSCH at step **915**.

[0116] The UE-MAC-C/SH protocol entity transmits the received RLC-PDU to the UE-MAC-D protocol entity by using MAC-C/SH-Data-IND after transforming the received MAC-PDU to the RLC-PDU at step **916**.

[0117] Accordingly, the UE-MAC-D protocol entity transmits the received RLC-PDU to the UE-RLC protocol entity through the logical channel (MAC-D-Data-IND primitive), such as the DTCH at step **917**.

[0118] Finally, the UE-RLC protocol entity interprets the received RLC-PDU and transmits it to an upper layer after transforming the RLC-PDU to the original data form, and then transforms a response to the SRNC-RLC protocol entity at step **918**.

[0119] **FIG. 10** is a flow chart showing a data transmission method in case of using a relation indicator in accordance with the present invention.

[0120] In here, the relation indicator means an indicator that denotes a relation relationship between the RLC-PDU and the HARQ-RLC-Control-PDU, which is generated based on the header part of the RLC-PDU. The relation indicator is added to the RLC-PDU and the HARQ-RLC-Control-PDU, and they have same value when they have the same relationship. By using the relation indicator, the CRNC-MAC-C/SH protocol entity can treat the related RLC-PDU and the HARQ-RLC-Control-PDU at the same time and with this, an effective operation of the hybrid ARQ type II/III is possible.

[0121] First, the SRNC-RLC, which receives data from the upper layer, make the received data to the RLC-PDU and generates the relation indicator which denotes an relationship with the HARQ-Control-RLC-PDU which is used in the RLC-PDU and the hybrid ARQ type II/III. The generated RLC-PDU and the relation indicator are transmitted to the SRNC-MAC-D protocol entity through the logical channel (MAC-D-Data-REQ primitive) by using DTCH at step **101**.

[0122] After that, the SRNC-RLC protocol entity generates the HARQ-RLC-Control-PDU by using header part information of the RLC-PDU. At this time, the generated HARQ-RLC-Control-PDU includes sequence number and version number information. Subsequently, the SRNC-RLC protocol entity generates a relation indicator, which denotes a relationship between the RLC-PDU and the HARQ-RLC-Control-PDU which is used in the hybrid ARQ type II/III. The value of the relation indicator is same as the value of the relation indicator generated to the RLC-PDU at step **101**. After that, the SRNC-RLC protocol entity transmits the generated HARQ-RLC-Control-PDU and the relation indicator to the SRNC-MAC-D protocol entity through the logical channel (MAC-D-Data-REQ primitive), such as the DCCH at step **102**.

[0123] In here, in case of using the same type of logical channel, the SRNC-RLC protocol entity transmits the generated HARQ-RLC-Control-PDU and the relation indicator

to the SRNC-MAC-D protocol entity by using the logical channel (MAC-D-Data-REQ primitive), such as the DTCH.

[0124] After that, the SRNC-MAC-D protocol entity, which receives the RLC-PDU and the relation indicator through the logical channel (MAC-D-Data-REQ primitive), such as the DTCH, transmits the RLC-PDU and the relation indicator to the CRNC-MAC-C/SH protocol entity by using MAC-C/SH-Data-REQ primitive at step **103**. At this time, the transmission type is defined Iur interface that defines an interface between the SRNC and the CRNC.

[0125] The SRNC-MAC-D protocol entity, which receives the HARQ-RLC-Control-PDU and the relation indicator through the logical channel (MAC-D-Data-REQ primitive), such as the DCCH, transmits the HARQ-RLC-Control-PDU and the relation indicator to the CRNC-MAC-C/SH protocol entity by using the MAC-C/SH-Data-REQ primitive at step **104**. At this time, the transmission type is defined an Iur interface that defines an interface between the SRNC and the CRNC.

[0126] In here, in case of using same type of logical channel, the SRNC-MAC-D protocol entity, which receives the HARQ-RLC-Control-PDU and the relation indicator through the logical channel (MAC-D-Data-REQ primitive), such as the DTCH, transmits the HARQ-RLC-Control-PDU and the relation indicator to the CRNC-MAC-C/SH protocol entity by using the MAC-C/SH-Data-REQ primitive. At this time, the transmission type is defined the Iur interface between the SRNC and the CRNC.

[0127] Meanwhile, the CRNC-MAC-C/SH protocol entity, which receives the RLC-PDU, the HARQ-RLC-Control-PDU and the relation indicator to each of the PDU, compares the relation indicator to each of the PDU and in case of having the different value, storing all the received data to the buffer. Then, compares with the data received from the SRNC-MAC-D protocol entity and in case of same, carries out the DSCH transmission scheduling to transmit the received RLC-PDU and the HARQ-RLC-Control-PDU through the transport channel, such as the DSCH and allocates the TFI1 and the TFI2 to the RLC-PDU and the HARQ-RLC-Control-PDU, respectively then transforms the RLC-PDU and the HARQ-RLC-Control-PDU to the MAC-PDU at step **105**. At this time, the MAC-PDU which transforms the RLC-PDU and the HARQ-RLC-Control-PDU are the MAC-PDU a and the MAC-PDU b, respectively.

[0128] The CRNC-MAC-C/SH protocol entity transmits the MAC-PDU a which has the RLC-PDU and the allotted TFI1 to the physical layer of the node B through the transport channel (PHY-Data-REQ primitive), such as the DSCH. At this time, the transmission type is defined the Iub interface that defines an interface between the RNC and the node B.

[0129] Also, The CRNC-MAC—C/SH protocol entity transmits the MAC-PDU b which has the HARQ-RLC-Control-PDU and the allocated the TFI2 to the physical layer of the node B through the transport channel (PHY-Data-REQ primitive), such as the DSCH. At this time, the transmission type is defined the Iub interface that defines an interface between the RNC and the node B.

[0130] After that, the physical layer of the node B transforms the MAC-PDU a and the MAC-PDU b, which have